the Maryland natural resource

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MARYLAND
Smart, Green & Growing

Martin O'Malley
Governor

Maryland Department of Natural Resources

John R. Griffin
Secretary

The Maryland Natural Resource
...Your guide to recreation & conservation in Maryland

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MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Concord Passing
Rachelle Rogers

the Maryland natural resource

Features

In Every Issue

On the cover: ***Drosera rotundifolia***
Dave Kazyak

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The Common Good

Jay Baker

Everything around us – our cars, houses, televisions, food, water, air, electricity, schools, shopping malls, factories, computers, vacation spots – is ultimately derived from our natural resources. The prosperity that we enjoy today is the result of the choices our parents' and grandparents' generations made on how to use the resources available to them. Now we are the decision makers, and how we choose to use and protect the world around us will determine the prosperity of our children and theirs.

We live in a very different world today with unique challenges. To build a better future for the next generation, we must position Maryland to be a leader in the new economy – the inevitable economic and social changes and opportunities that have already begun as we adapt to growing within our finite resources.

As we transition into the new economy, we must recognize that a restored environment, a vibrant economy, and a healthy society are three interdependent parts of a prosperous Maryland. Over the long-term, all three rise or fall together. Realizing a sustainable future for Maryland requires us to act accordingly – reaching across traditional boundaries and thinking generationally for the benefit of our children and grandchildren.

Continuing an ongoing dialogue with the people of our State, members of the Executive Cabinet joined with more than 650 conservationists, farmers and business owners on Maryland's Eastern Shore to discuss new opportunities and strategies for creating a more sustainable Maryland. Participants in our Maryland Forward Forum on Sustainability demonstrated their strong support for continuing to escalate Chesapeake Bay restoration efforts, pursuing offshore wind development to provide clean energy and green jobs, expanding public transit options, and providing economic incentives to conserve land.

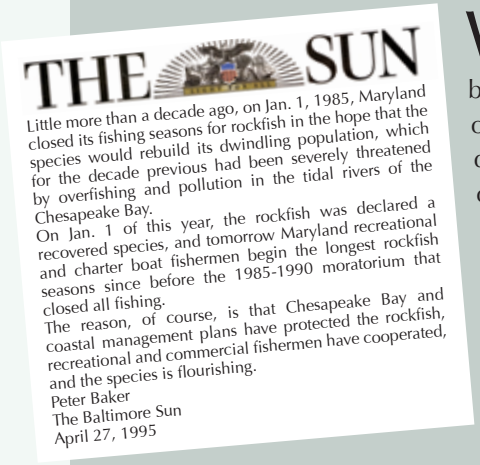
Together, over the past four years, we have begun to lay out a blueprint for building a more sustainable future. Together, we have worked to target and preserve our most sensitive landscapes, taken bold action to restore our blue crab, native oyster and other important fisheries, created and sustained "green jobs" through resource-based industries such as forestry, agriculture and tourism, and developed new tools such as the Genuine Progress Indicator to measure how our economic progress impacts our long-term prosperity.

I invite you to join with me in taking a broader, generational approach to addressing our problems – focusing not just on our immediate interests in the here and now, but also on the broader and longer term implications of our decisions. In the words of the great naturalist Aldo Leopold, "All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him also to cooperate." Our challenge is to rise above our instincts, and embrace our ethics.

One of the best things about the people of Maryland is that we don't make excuses, we make progress. These are exciting times, with great opportunities ahead. Working together, we should not fear these changes; instead we should embrace them. Doing so will provide us with the ultimate reward: A Smart, Green and Growing Maryland that remains a livable and economically viable state for generations to come.

Martin O'Malley
Governor

Consider the Elements



THE SUN

Little more than a decade ago, on Jan. 1, 1985, Maryland closed its fishing seasons for rockfish in the hope that the species would rebuild its dwindling population, which for the decade previous had been severely threatened by overfishing and pollution in the tidal rivers of the Chesapeake Bay.

On Jan. 1 of this year, the rockfish was declared a recovered species, and tomorrow Maryland recreational and charter boat fishermen begin the longest rockfish seasons since before the 1985-1990 moratorium that closed all fishing.

The reason, of course, is that Chesapeake Bay and coastal management plans have protected the rockfish, recreational and commercial fishermen have cooperated, and the species is flourishing.

Peter Baker
The Baltimore Sun
April 27, 1995

With the illegal netting of 12.6 tons of striped bass in February, citizens in our own State and up and down the East Coast were outraged by the criminal threat to a population that so many sacrificed to save a quarter century ago . These blatant thefts of the public trust forced us to close the February striped bass gill net fishery until we were able to ensure we would not exceed our State's quota for this important shared resource, stealing further from the honest, hardworking watermen who make a living from our Bay's bounty.

The only bright spot throughout this unconscionable situation, has been the unprecedented support of our staff, stakeholders and elected officials.

Maryland Natural Resources Police braved frigid temperatures, working around the clock to identify those responsible for these crimes. Fishery managers, ice breaking crews and geological surveyors joined them, helping load and distribute the illegal harvests, man check stations and search for further illegal activities.

At this writing we continue to offer a reward of more than $30,000 for information leading to the arrest and conviction of the criminals responsible -- a reward made possible through generous contributions from the Maryland Coastal Conservation Association, Chesapeake Bay Foundation, Chesapeake Bay Savers, Maryland Charter Boat Association, Maryland Saltwater Sportfishermen's Association and Maryland Watermen's Association and private citizens.

Lawmakers and stakeholders are working with us to develop and propose further regulations and increased penalties to better address under-reporting of harvest at check stations and illegal markets for untagged and unchecked striped bass, in addition to the use of illegal gill nets. Similar efforts are underway to enhance penalties for the illegal harvest of oysters, a fragile fishery being further endangered by those who disregard the law.

Jay Baker

In an interesting juxtaposition, just as we were in the thick of addressing these blatant thefts of the public trust, Agriculture Secretary Buddy Hance and I had the honor of co-hosting a celebration of Maryland seafood at the Boatyard Bar and Grill in Annapolis. Yellow perch, blue fish, oysters, and yes, striped bass, received a well-deserved spotlight at this sold-out event, which was attended by members of the seafood industry, recreational anglers, conservationists and fishery biologists alike, and which will be replicated across our State in the months ahead.

With all the recent attention on striped bass and oysters, it is important to remember that our ultimate goal is to manage every Maryland fishery for sustainability over the long term. Under the leadership of Governor O'Malley, Maryland has been consistently conservative in its approach to managing the State's fishery resources… including blue crabs, oysters, yellow perch, snapping turtles, terrapins, menhaden, horseshoe crabs and river herring, while keeping in mind the priorities of our seafood and recreational industries. This record on fisheries management should reassure citizens and stakeholders that we will continue to protect all fisheries threatened by poachers, to the fullest extent of the law.

We hope to never return to the day when a fishery – any fishery – is forced to close in Maryland. And we offer our deepest gratitude to all of those who share our vision and stand along side us to make it a reality.

John R. Griffin
Secretary

Crassostrea Virginica

The long road to recovery

In 1905, William Brooks wrote, "the oyster grounds of Virginia and North Carolina, and those of Georgia and Louisiana, are increasing in value, and many of our packing houses are being moved to the south, but there is no oyster farming in Maryland, and our oyster beds are still in a state of nature, affording a scanty and precarious livelihood to those who depend upon them."

For more than a century, little was done to change this status quo. Until now.

Since 1994, the Chesapeake Bay's oyster population has languished at 1 percent of historic levels. Twenty-five years ago there were 200,000 acres of oyster bars; today there are 36,000. In 1985 our oyster fishery supported more than 2,000 harvesters; today — despite a $30 million state and federal investment in industry recovery efforts — Maryland is home to just over 500 oyster harvesters. In 1974, there were 58 oyster processing companies in Maryland. Today there are eight.

Of course, the decline in our oyster populations is not solely the result of a failure to embrace aquaculture; diseases, pollution and destruction of habitat have contributed significantly. Economic contributions to the oyster industry that once produced benefits averaging $14 million a year now produce economic losses of $6 million annually.

"The old management approach was not sustainable and was not yielding the results we needed – for our ecosystem or our watermen," says Maryland Department of Natural Resources (DNR) Secretary John Griffin. "It was not keeping watermen employed and was slowly stripping away their livelihoods."

So, after decades of doing the same thing year after year, the citizens of Maryland have united in an unprecedented effort to change course, to rebuild its native oyster population for their ecological and economic values.

Survey says...

Since 1939, DNR and its predecessor agencies have monitored the status of Maryland's oyster population via annual field surveys — one of the longest running such programs in the world. According to Maryland's fall 2010 oyster survey, the number of spat (baby oysters) in Maryland waters is at its highest level since 1997 and the survival rate for young oysters is also up.

The annual survey tracks three critical components of the population: Spatfall Intensity, which measures reproduction levels (recruitment) and offers a window into future population levels; disease infection levels; and annual mortality rates of oysters.

At nearly 80 spat per bushel, the 2010 spatfall is the highest since 1997, and about 5 times the 25-year average of 16. Eleven of the 53 oyster bars included in this index had their highest or second highest spat counts since 1985. The elevated spatfall was a coast-wide phenomenon, with other mid-Atlantic states also reporting better than average numbers.

Equally encouraging was wide distribution of spat throughout the Bay and its tributaries. While the heaviest counts were in the lower Bay's higher salinity areas, where reproduction is typically more successful, a moderate spatfall also occurred in lower salinity areas that generally receive little to no spat sets at all. These included the upper Bay as far north as Pooles Island and the upper reaches of the Chester, Choptank and Patuxent River tributaries — areas that are now protected under the State's expanded sanctuary program.

"The increased spat set is an immediate asset to Maryland's expanded sanctuary program," says DNR Fisheries Director Tom O'Connell. "These protected oysters

Chris Dungan (2)

ABOVE: Oyster spat attached to the adult oyster shell
BELOW: 15 months later

will grow and reproduce, contributing more oysters to the Bay's sanctuary and surrounding aquaculture and public fishery areas, and providing important ecological benefits such as water filtration and reef habitat."

"Even as our population stood at 1 percent of historic levels, we did not give up... and we now have exciting new evidence that — like our blue crab — our native oyster has not given up either," says Governor Martin O'Malley. "We now have reason to be more optimistic than ever about the recovery of this iconic species, a recovery that would further improve water quality, create green jobs and support local economies."

Resisting disease?

Even more encouraging news for the troubled mollusk is that the frequency and intensity of diseases remain low, based on December's interim report from the Paul S. Sarbanes Cooperative Oxford Laboratory. Of the two diseases that have devastated populations for decades, Dermo, although still widely distributed, remains below the long-term average for the eighth consecutive year, and MSX appears to again be in retreat after an advance in 2009.

The survey indicates that oyster survivorship — the percentage of oysters found alive in a sample — was at 88 percent, also the highest level since 1985. This is more than double 2002 when record disease levels left only 42 percent of Maryland's population alive. Scientists are hopeful that favorable mortality in recent years may reflect an increase in disease resistance.

"These moderate levels of natural oyster mortalities during recent years may reflect increases in disease resistance among oysters and their progeny that survived the severe disease pressures of the 1999-2002 drought," says Chris Dungan, manager of oyster disease research at the Oxford Lab. "Those same disease-selected oysters are the parents that spawned to produce the significant spat set of 2010."

"In this new reality, where disease mortality sometimes exceeds natural and fishing mortality, recruitment has become of singular importance," said DNR Fisheries Service Assistant Director Mike Naylor. "While challenges remain and recovery — particularly development of disease-resistance — will take decades, if the present trend in below average mortalities continues, the combination of the great 2010 spatset and low mortality should bode well for Maryland's oyster population and fishery well into the future."

Hilary Stevens, IAN Image Library (ian.umces.edu/imagelibrary/)

Oyster sanctuary buoy marker

A comprehensive plan

While it is too soon to predict what the future holds for the Bay's native oyster, these burgeoning populations should have a better than normal chance at survival, thanks to the leadership of Governor Martin O'Malley and a new plan to restore our oysters and the jobs and economies it has long supported.

Maryland's Oyster Restoration and Aquaculture Development plan, implemented last year after a rigorous public comment period, was built on the findings of a six-year Environmental Impact Study and the dedicated work of the Oyster Advisory Commission, Aquaculture Coordinating Council, our State fishery managers and scientists and from citizens around the Bay.

It increases Maryland's network of oyster sanctuaries from 9 percent to 24 percent of remaining quality habitat and increases areas open to leasing for oyster aquaculture, while maintaining 76 percent of the Bay's remaining quality oyster habitat for a more sustainably managed public fishery.

"Our native oyster is part of the public trust, and we have a clear and urgent responsibility to restore this iconic

Fisheries Service

Tom O'Connell, Director of the Fisheries Service, lends a hand measuring oysters in the Choptank River.

species to the Chesapeake Bay," says Governor O'Malley. "This three-step plan will simultaneously help us restore the Chesapeake Bay, bring back our native oyster, and create new jobs and economic activity in our State."

Sanctuaries allow oysters to live longer, spawn without harvest pressure and, over time, develop natural resistance to disease. Prior to 2009, Maryland's oyster sanctuaries covered only 1,475 acres of bottom habitat. They were small and sparsely distributed, making them difficult to protect from poachers and relatively ineffective as restoration tools.

Targeted to facilitate development of natural disease resistance, the new sanctuaries protect roughly half of the Bay's most productive oyster grounds and have high restoration potential based on water quality and other factors. They also increase our ability to protect these important areas from poaching.

Both recreational and commercial fishing should benefit from improved oyster bars in these areas, which also provide critical habitat to blue crabs, striped bass, white perch and other important fish. Larvae from these areas will also help repopulate nearby public shellfish fishery areas.

To further protect the native oyster, DNR has undertaken a number of enforcement reforms, including a collaborative effort with federal partners to launch the Maritime Law Enforcement Information Network, a system of radars and cameras that help Natural Resources Police (NRP) monitor oyster sanctuaries and prevent poaching.

"Marylanders have invested significant time, money and effort into restoring our native oyster," says NRP Superintendent George Johnson IV. "We must protect our investment which is critical to the future health of the Chesapeake Bay both ecologically and economically."

The bars are open

Aquaculture is now the predominant means of shellfish harvesting around the world; in Virginia it is already a $30 million business. And University of Maryland economists estimate that over the next several years, Maryland's oyster aquaculture plan could create 225 full-time equivalent jobs and generate $25 million in annual economic impact.

In addition to the opening of more than 95,000 acres of natural oyster bars to leasing, the State has also developed a program to provide affordable financing to watermen and others interested in launching or expanding commercial shellfish aquaculture operations.

"The wide-scale development of shellfish aquaculture in Maryland's Chesapeake and Coastal Bays is a fundamental component of our Oyster Restoration and Aquaculture Development Plan and will be a key contributor to rebuilding the region's seafood industry," says DNR Secretary John Griffin. "This loan program — a partnership between DNR and the Maryland Agricultural and Resource-Based Industry Development Corporation — is one of a suite of programs created to lessen the impact of new sanctuaries on our watermen and help them transition into new business ventures."

Jill Zarend-Kubatko

Oyster cages stacked and ready for use

To date 27 Marylanders have applied for 37 new aquaculture leases on 2,600 acres, and the State has received 27 applications for almost $2.2 million in available funding for start up and expansion of aquaculture businesses.

Funding for the loan program as well as watermen work programs designed to help mitigate economic impact to the industry, comes from the federal blue crab fishery disaster money and state capital funds. Senator Barbara Mikulski and the Maryland Congressional delegation have been stalwart champions of this effort.

Partners in progress

"Through the steady leadership provided by Governor O'Malley, Senator Mikulski and Secretary Griffin — as well as the growing environmental stewardship of Marylanders — we are changing the face of oyster restoration while preserving our cultural heritage in Maryland and witnessing historically significant growth in our capacity to improve Chesapeake Bay waters," says Stephan Abel, Executive Director for the Oyster Recovery Partnership.

In a coordinated effort among the Partnership, the University of Maryland, the NOAA Chesapeake Bay office and DNR, over 2.5 billion hatchery produced spat have been produced and planted in Maryland's portion of the Chesapeake Bay since 2000, and thousands of acres of buried shell have been reclaimed from derelict oyster reefs.

Through Marylanders Grow Oysters, a program created by Governor O'Malley in 2008, citizens are now growing baby oysters from private piers in 19 Chesapeake Bay tributaries. The baby oysters are being grown in cages built by Maryland inmates and are planted on local sanctuaries after growing protected for 9 to 12 months.

What lies ahead

There are many chapters to Maryland's oyster story, and the future for *Crassostrea virginica* is yet to be written. However, the results from the 2010 survey, along with the new three-pronged plan to rebuild Maryland's beleaguered population, are giving the industry, scientists and citizens new reasons to be hopeful.

"For more than 15 years, the State and its partners have aimed to jump-start Mother Nature by investing in building the necessary infrastructure, deploying billions of oyster spat on shell and reclaiming thousands of acres of buried shell from derelict oyster reefs. Now, it seems she's fighting with us," says DNR Secretary John Griffin. "These animals are proving just how resilient they can be given the right circumstances."

OYSTERETTES

An experiment to improve oyster restoration

By Cassie Greenhawk, Alex Welch, Jackie Fisher, Jenn Mielke, LeeAnn Hutchison, Chris Dungan

When a group of Easton High School seniors were seeking resources to support an independent research project required by their AP-biology class, they heard opportunity knock when oyster spat and cages from the Marylanders Grow Oysters program became available for their research.

The students hoped to discover methods that might enhance the success of Maryland citizens' oyster growing endeavors, by testing if and how the growth and survival of caged oyster spat were influenced by the depth at which those cages were hung from the Tred Avon River pier at the Cooperative Oxford Laboratory. This is the story of that research project as it matured over more than a year, and of several exciting discoveries about marine biology and scientific methods that the students made in the process.

Using growth for good

With the growing number of private pier structures associated with increased residential development of Chesapeake Bay shorelines, citizens are increasingly hosting caged baby oysters (spat), helping populate protected local oyster sanctuaries.

In this way, oyster populations receive reciprocal benefit from human shoreline developments whose direct and indirect impacts normally are among those challenging the restoration of Maryland oyster populations. Oyster gardeners are establishing an intimate connection with the oyster spat they rear and release, deepening their experience with living estuarine communities and taking personal stake in becoming active partners in conserving the Bay's environment.

LeeAnn Hutchison

Students Jenn Mielke, Jackie Fisher and Cassie Greenhawk retrieve a cage of experimental oyster spat.

The Oysterettes

In October, the high school students prepared cages of oyster spat for distribution to citizen volunteers with piers along the Tred Avon River, and they received three cages containing oyster spat attached to the shells of dead adult oysters for their own experiment.

Using a lead-line they constructed, the students measured the maximum high-tide depth of waters beneath the pier, and hung one cage of oyster spat near the bottom, another near the surface, and another at mid-depth. After the experiment began in November, the students retrieved their oyster cages

each month for a year to collect data on the growth and survival of their spat, and the research team was dubbed the "Oysterettes."

The devil's in the details

Very soon after the experiment started, the students learned how tidal water levels in the Tred Avon River are affected by wind when a January low-tide coincided with strong northwest winds to expose the oyster spat in the shallow Cage-1 to freezing air temperatures. An adjustment was made to lower the shallow cage 12-inches deeper, keeping it submerged for the rest of the experiment.

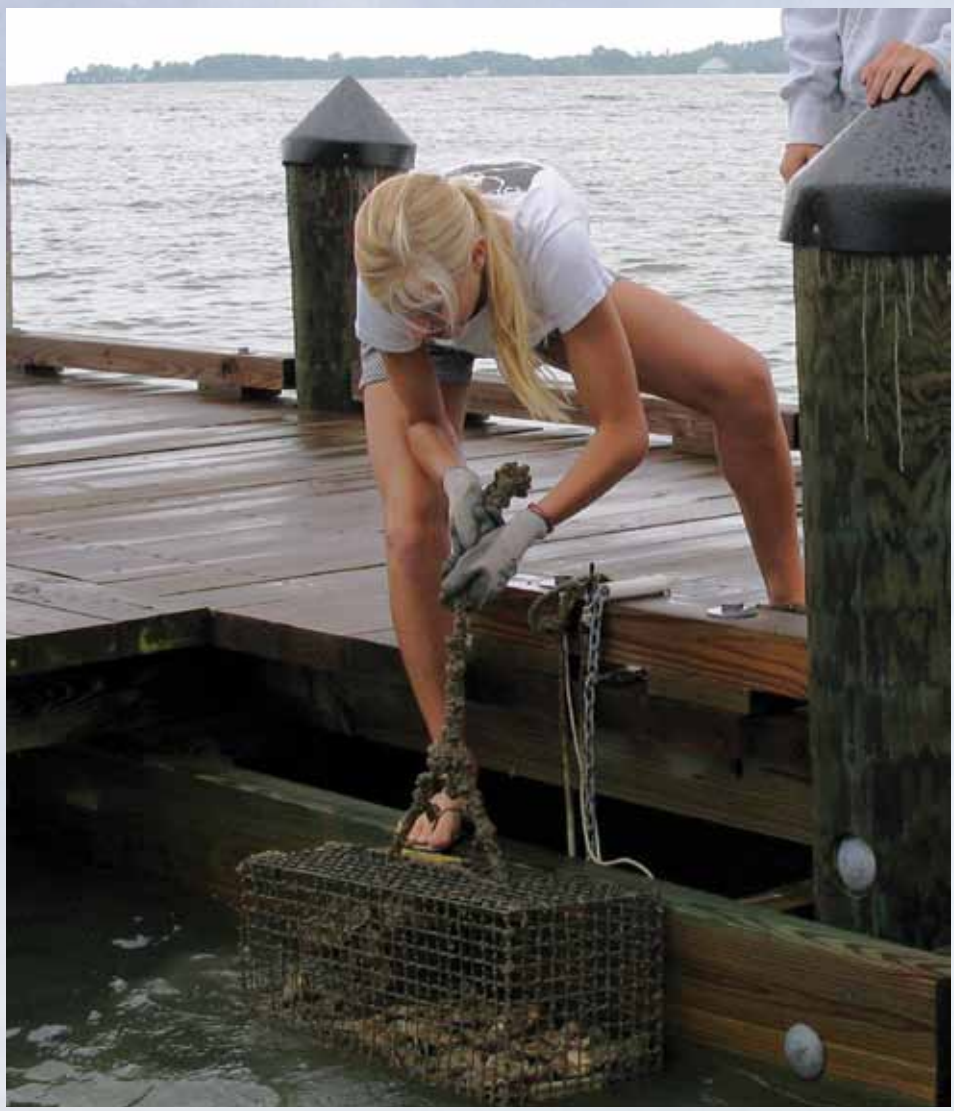
In January, students Jenn Mielke, Jackie Fisher, and Cassie Greenhawk had to break surface ice in order to retrieve their experimental cages for the month's data collection.

In addition to the loose shells bearing oyster spat in each cage, about 13 adult oyster shells collectively bearing approximately 200 total oyster spat were drilled, strung on a wire and hung inside each cage. Live spat attached to the adult oyster shells on the wires were re-counted and re-strung each month to estimate spat survivals in each cage. During monthly data collections, shell heights of 100 oyster spat attached to the adult oyster shells in each cage were measured to estimate mean sizes over time as a way to monitor the growth of the spat.

Changes with the seasons

From November through April, growth of the experimental oyster spat in all of the cages was negligible. From May through October, oyster spat in all cages grew rapidly, with those in the shallowest cage quickly reaching and maintaining larger sizes. The growth of the spat ceased again at the beginning of their second winter season.

Although many oyster spat died during their first year, 19 to 45 percent survived and grew to fill nearly all available spaces in the three experimental cages. Even for the student-athletes, the cages of grown oyster-juveniles were notably heavier to lift after 12 months than at the experiment's beginning.



LeeAnn Hutchison

Jackie Fisher raising an oyster cage.

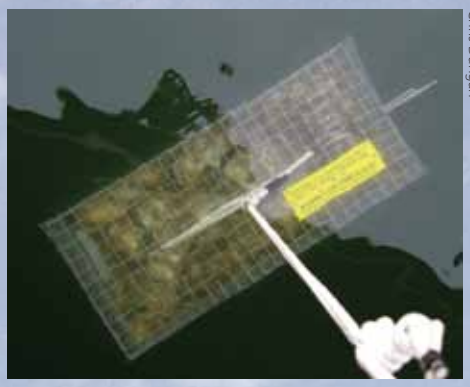
Results run deep

Four students measured growth and survival among groups of oyster spat reared at three depths. They found that growth was consistently greatest among oyster spat in the shallowest cage, while survival was greatest among spat in the deepest cage. Where growth of spat is a priority, shallow rearing gives a slightly better result. Since cumulative survival of oyster spat reared near-bottom was more than twice that of spat reared in the shallow cage, near-bottom rearing seems optimal for survival. For oyster growers seeking to optimize both growth and survival, mid-water suspension of cages kept covered by three-feet of water at the lowest tides may yield the best overall results.

"Studying the effects of cage depth on oyster growth started out as a semester-long project," says Jackie Fisher, a student participant. "But as trends began to show in our data, we really wanted to continue with the experiment so we could reach a solid conclusion."

An ecosystem thrives

During data collections, the students were impressed by the great numbers and changing varieties of animals that colonized on the experimental oyster cages and shells, including a juvenile eel, skilletfish, blennies, gobies, barnacles and slithering flatworms. Rotund, filter-feeding sea squirts colonized the oyster cages in huge, rubbery masses during May, followed



Chris Dungan

ABOVE: Submerged veiw of oyster cage

RIGHT: Chris Dungan, Cassie Greenhawk and Jackie Fisher examine an oyster cage at the Cooperative Oxford Laboratory.

LeeAnn Hutchison

It takes a village to grow oysters

In 2008, Governor Martin O'Malley launched Marylanders Grow Oysters. The program provided inmate-built cages of oyster spat from the University of Maryland Horn Point Oyster Hatchery, which are hung from the piers of volunteer growers along the Tred Avon River in Talbot County. From about 860 cages of oyster spat that were distributed to volunteers, more than 200,000 juvenile oysters were collected a year later for planting on a protected local oyster sanctuary.

That pilot program was such a success that the project was expanded in 2009 to partner with local stakeholder groups to place 5,000 additional oyster spat nursery cages along the shores of 11 additional Chesapeake Bay tributaries, including the Corsica River, Magothy River, Severn River, South River, Patuxent River, St. Mary's River, Wicomico River, Nanticoke River, and Annamessex River; as well as La Trappe and San Domingo creeks in Talbot County. Last summer the thriving program expanded by seven new rivers creating a total of 19 Chesapeake Bay tributaries.

by mud crabs, juvenile blue crabs, grass shrimp, bloodworms, and anemones during June and July. Finally, large coralline colonies of lacy crust byozoans dominated during October and November. At the end of the year, the cages were filled with diverse communities of fish and invertebrates that crowded space among the growing oysters.

The experimental oysters thrived despite reports that Tred Avon River and Choptank River waters are subject to high sediment loads, low oxygen levels, and high bacteria counts, collectively reflecting negative consequences of increased human populations in that watershed.

The growth and survival of oyster spat, and the striking abundance and diversity of animals that colonized the spat-bearing oyster shells in our experimental cages, bore testimony to the enduring capacities of Chesapeake Bay species to thrive wherever elevated solid surfaces offer habitat. They learned first-hand that there is a vibrant community of Chesapeake Bay animals poised to reciprocate even the smallest conservation efforts, like hanging cages of oyster shells from a pier. ■

oysters.maryland.gov/

The Oysterettes

Cassie Greenhawk, a sophomore Environmental Studies major at Bucknell University, is a member of Bucknell's 2010 Patriot League champion softball team. Cassie is preparing for a career in environmental science.

Alexandra Welch is a sophomore soil and watershed science major at the University of Maryland, College Park. She plans a career as a professional soil scientist, and hopes to develop methods for sustainable agriculture in under-developed and undeveloped nations.

Jackie Fisher is a sophomore psychology major at the University of Maryland, College Park. She plans a career as a physician or a clinical psychologist.

Jenn Mielke is a sophomore at High Point University. She is majoring in Athletic Training and planning a career as a physical therapist.

LeeAnn Hutchison is an Environmental Education Specialist with the Maryland State Department of Education, and is a veteran Environmental Science instructor with Talbot County Public Schools.

Chris Dungan is a DNR Research Scientist at the Cooperative Oxford Laboratory.

Fish Tales

Share your catch

By Keith Lockwood

MARYLAND ANGLER'S LOG
SHARE YOUR CATCH.

Everyone has heard the story about the one that got away. These tales are about the ones caught and in-turn shared with avid anglers across the World Wide Web!

Many fishermen are familiar with the Maryland Department of Natural Resources (DNR) Fishing Report website and rely upon it to get the latest fishing information and tips before heading out on the Chesapeake Bay, Atlantic Ocean or their favorite freshwater fishing spot.

From ice fishing in Piney Reservoir, to where the yellow perch are running, to questions about fish kills, the Anglers Log keeps all informed about the bounty of Maryland's fisheries. Even if one is not a fishing aficionado, it's entertaining to read about what's going on in an angler's world.

Long history

The fishing report has a long history of writers dating back to the early 1960s when the reports were written by Bill Perry, copied on a mimeograph machine and mailed to tackle shops and outdoor writers each week. The concept seems hard to believe in today's age of instant news over the Internet.

Today there are very few outdoor writers; and as media channels evolve with new technologies, fishermen now come directly to the source. This direct access provides a conduit for the latest fishing news and findings by biologists working on management and restoration efforts to fishermen reading the fishing reports.

Keith Lockwood

Fishing, a great way to spend quality family time

Photo fish

The Angler's Log website not only encourages fishermen to tell their own fishing stories and post pictures, they can also direct questions to fisheries staff and the answers are publicly posted.

The fishing report is posted every week on Wednesdays from early March through mid-December and covers fishing opportunities from the trout streams of Western Maryland to the waters of the Atlantic off Ocean City. The log is kept current five days a week and provides daily postings of fishermen telling their own stories or asking fisheries related questions.

Rare is the week that a picture doesn't come in from a reader that instantly tells a story. The three young boys in the accompanying photograph are cousins and have undoubtedly begun to share a lifetime of fishing adventures together with their dads. Traditions such as fishing and enjoying the outdoors together help form and secure lifelong family bonds.

Family time

Fishing can often bring families back together such as the story of two grown brothers who were visiting their dad in Ocean Pines for Father's Day in 2009 and convinced him to once again take them fishing. As a result, Brent Applegit of Golden, Colorado, caught a new State record thresher shark off Ocean City and shared a family adventure with his father and brother that will never be forgotten. ■

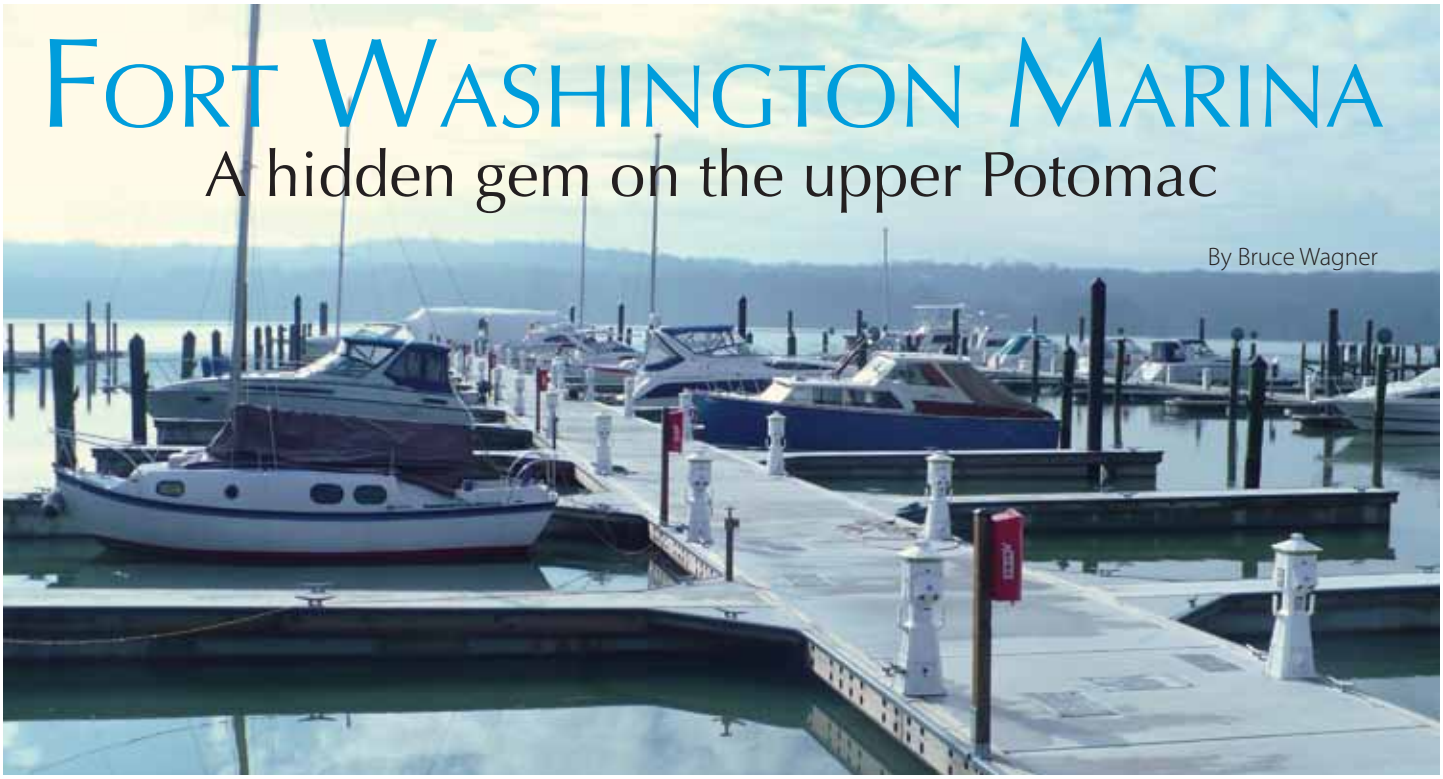
dnr.state.md.us/fisheries/fishingreport

Keith Lockwood is Recreational Fisheries Outreach and Marketing Specialist with DNR's Fisheries Service.

Fort Washington Marina

A hidden gem on the upper Potomac

By Bruce Wagner



Those who have never ventured to the end of Fort Washington Road by car or into Piscataway Creek by boat, have truly missed one of the hidden waterfront gems of the Maryland-Washington D.C. area!

Fort Washington Marina is located on the peaceful, beautiful shores of Piscataway Creek. This quiet, undeveloped, natural tributary of the Potomac River lies within the protected watershed of George Washington's Mount Vernon.

The fascinating history of this area harkens back centuries to early settlements of indigenous Piscataway Indian tribes; to the discovery voyage of Captain John Smith who landed on these shores in the early 17th century; to the nearby, still standing, Fort Washington which provided protection to Washington D.C. albeit unsuccessful, from the British in the early 19th century.

Many amenities

The Marina is on the north shore of Piscataway Creek offering pristine views of this beautiful waterway along with many amenities and features not found in any other nearby marinas. It is one of the largest marinas off the Potomac River with more than 225 slips on stable floating docks for boats from 25-feet to more than 50-feet long.

Originally built in the 1950s, the U.S. National Park Service acquired it in 1974, and then handed over the operation to the Maryland Department of Natural Resources (DNR). Recent renovations by DNR have resulted in three new concrete floating docks.

In addition to offering dockage for annual, seasonal and transient boats, the marina offers a genuine boatyard facility with the area's only 35-ton travel lift, which can elevate boats up to 50-feet onto its work area for service or winter storage.

Several onsite contractors offer mechanical and electrical repairs, hull-painting, bottom work, and most any other service necessary for proper maintenance. Do-it-yourself service is also available for boat owners. The marina also features two 24-hour boat-ramps for self-launching, as well as year-round gas and diesel during marina hours.

Overlooking the docks is a large, modern marina office building which houses the public facilities.

There are clean, convenient restrooms and hot showers, along with a laundry room within the large heated/air-conditioned building. A waterfront restaurant offering refreshments and fine dining is available for visitors and boaters.

Kayaks and more

Some of the most popular amenities of the marina are onsite kayak rental and sales and fishing in and near the creek for record-sized large-mouth bass, catfish and other popular species. It is very common to see bald eagles, blue herons, hawks, migrating waterfowl and many other types of wildlife at the marina. The marina offers a picnic area with barbecues as well as a gazebo.

The marina and boatyard facility is professionally managed by Coastal Properties Management, Inc. through a long-term contract with DNR.

Contact Marina Manager Becki Sorianosos for boat slip rates, storage and haul-out information at 301-292-7700. For restaurant information call 301-292-5521. ■

coastal-properties.com

Bruce Wagner is vice president of operations of Coastal Properties Management, Inc.

NRCS Web Photo

THE NEW CREP

Improving Maryland's landscape

By Glenn A. Carowan Jr.

Landowner Phil Young of Dorchester County was a bit nervous initially when inquiring about the Maryland Conservation Reserve Enhancement Program (CREP), but soon discovered that the benefits were too good to pass up.

Newly revised program

The newly revised CREP offers great news for Maryland farmers, wildlife and the Chesapeake Bay. Higher annual land rental payments and a one-time bonus payment are now available to eligible farmers who take environmentally sensitive cropland and marginal pastureland out of production and install best management practices to buffer streams and other bodies of water, protect highly erodible land, establish wetlands, or protect rare and declining wildlife species.

CREP is an enhanced and specifically targeted component of the nation's largest voluntary, private-lands environmental improvement program, the Conservation Reserve Program (CRP), which recently celebrated its 25th anniversary on December 23, 2010. In October 1997, Maryland became the first state in the country to receive approval for an enhanced CREP program to address high-priority conservation issues of both local and national significance.

Maryland periodically updates its program to better meet the State's agriculture-related environmental issues. The newly revised program was approved by Governor Martin O'Malley and U.S. Department of Agriculture (USDA) Secretary, Tom Vilsack, on April 24, 2009.

CREP addresses particular environmental issues with the goal to enroll a total of 100,000 acres of eligible cropland and marginal pastureland to include: 77,000 acres of stream buffers and related practices; 16,000 acres of highly erodible lands; 5,000 acres in wetland protection and enhancement practices; and 2,000 acres for habitat for rare and declining wildlife species.

With 70,651 total acres now enrolled, CREP has been the primary financial engine for establishing conservation practices which are critical to the restoration of the Chesapeake Bay as highlighted in the Chesapeake Bay 2000 Agreement.

The program is administered by the USDA's Farm Service Agency in partnership with the Natural Resources Conservation Service (NRCS), Maryland Departments of

Natural Resources (DNR) and Agriculture, and County Soil and Water Conservation Districts.

A good investment

"CREP is a good investment choice for landowners. At a time when every dollar counts, CREP is an excellent way for Maryland farmers to protect local waterways and earn extra income," says Maryland Department of Agriculture Assistant Secretary, Royden Powell.

The revised program does just that. For implementing specific conservation practices, landowners now receive the local soil rental rate (SRR) per acre plus additional incentive payments that range from 80 percent to 200 percent of the local SRR, depending upon the environmental benefit. In addition, landowners can receive a one-time signing bonus of up to $200 an acre, a one-time practice incentive payment of 40 percent of the total cost of establishing certain qualifying BMPs, and up to 87.5 percent of the cost to plant buffers.

Maryland farmers have responded well to the new program. To date, farmers now enroll more than one in every 20 of Maryland's cropland acres in conservation practices; the highest percentage of all the Bay states. The benefits are outstanding!

"It helped me out a lot," says Anne Bowers, the first CREP participant. She enjoys knowing she is helping out the State by putting in a riparian tree buffer on her Washington County property.

Benefits of Maryland CREP:

- Attractive, steady rental income
- One-time signing bonus of up to $200 an acre
- Up to 87.5% cost-share for most practices
- One-time incentive payment worth 40% of the total cost of installing certain practices
- Maintenance payments
- Easy re-enrollment of expiring contracts at new incentive rates
- Permanent easement option
- Cleaner, healthier waterways
- Erosion and flood control
- Healthier conditions for livestock
- Habitat for wildlife, fish and game

Lynn Betts

Contiguous tracts of managed native grassland habitat are used in combination with forested riparian buffers to benefit identified rare and declining grassland bird species and pollinators.

Conservation practices are responsible for reducing total loads delivered to the Bay by 14 percent for sediment, 15 percent for phosphorus, and 15 percent for nitrogen. Maryland's active CREP contracts have achieved an estimated reduction of approximately 8,124,865 pounds of nitrogen and 777,161 pounds of phosphorus, and control of over 141,301 tons of sediment

These practices also play an important role in achieving nutrient reduction goals that will be established in the State's Watershed Implementation Plan to address the Environmental Protection Agency's Total Maximum Daily Loads for the Chesapeake Bay.

Enrollment surges

Although Maryland's total enrollment in CREP declined by 223 acres during the 2009 program year, almost 4,400 new and re-enrolled acres were placed under contract in 2010. CREP contracts require a 10- to 15-year commitment to keep lands out of agricultural production.

Despite temptations to not enroll or re-enroll contracts due to rising commodity prices and pressures from development interest to sell their farms, Maryland farmers maintained the highest annual enrollment rate of all the neighboring Bay states. Easy re-enrollment of expiring contacts and new incentives spur citizens into action.

While the nation lost approximately 7.4 percent of the total acres enrolled in conservation practices, Maryland lost only .3 percent. Many of the prairie states, in comparison, lost 10-14 percent of their conservation practice acres.

This was also an exceptionally productive year for enrollment in the CREP easement program. Revitalization of DNR's permanent easement program enabled almost 2,800 CREP contract acres to be converted to perpetual easements. This represents almost a 40 percent increase in the easement program and the single highest enrollment since the program began in 2000.

A perpetual CREP easement is a written legal agreement between a landowner and the State of Maryland in which there is an acquired permanent interest in the land to install or maintain conservation practices that protect water quality and natural resources. The easement option is available only to landowners who have an existing federal CREP contract and who have installed the prescribed CREP conservation practices.

As USDA Secretary Vilsack says, "The Conservation Reserve Program has become one of the standouts in the USDA's arsenal of conservation programs by continuing to provide significant economic and environmental benefits beyond its original intent… (It is) a legacy of successfully protecting the nation's natural resources." ■

fsa.usda.gov
dnr.maryland.gov/wildlife/Habitat/milo.asp
mda.state.md.us/resource_conservation/financial_assistance/crep/index.php

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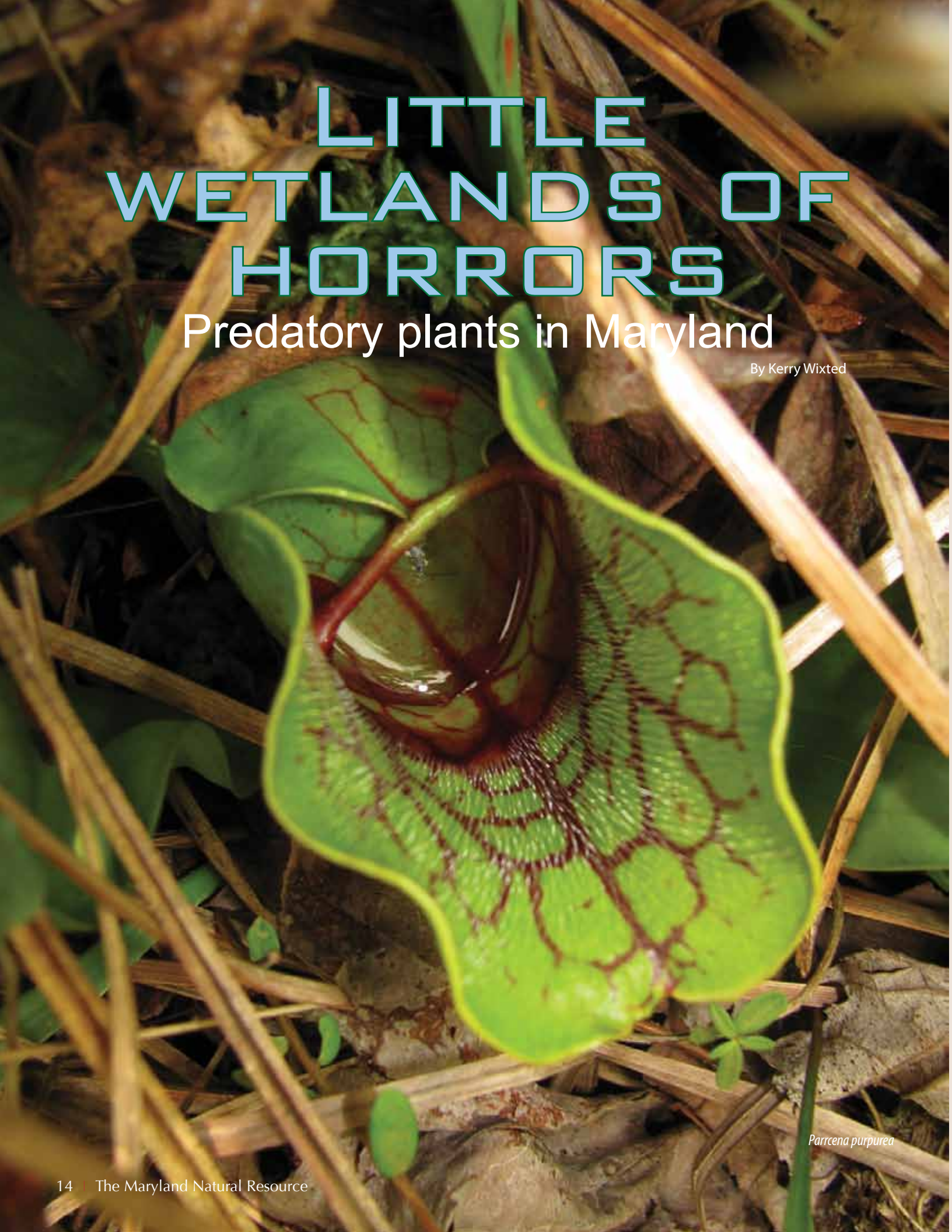
Glenn A. Carowan, Jr. is the Farm Bill Coordinator with DNR's Wildlife and Heritage Service.

Little Wetlands of Horrors

Predatory plants in Maryland

By Kerry Wixted



Parrcena purpurea

Kerry Wixted

Predatory, flesh eating, plants. The phrase sounds like something out of a science fiction novel in which bioengineered plants devour humans or beg for food from nerdy florists. While no plants are known to consume humans, more than 670 species and subspecies of carnivorous plants have been known to exist worldwide. Approximately 20 species of these specialized carnivores can be found lurking in the wetlands of Maryland.

Animals beware

So, what exactly is a carnivorous plant? A true carnivorous plant is one that has the ability to capture, digest and absorb animal prey. Carnivorous plant traps can be separated into two main categories: those which are passive or active at catching prey. Passive traps include "pitchers and papers." These species include plants with pitcher-like traps and plants with sticky, fly paper-like traps. In contrast, species such as the iconic Venus flytrap use active traps in which sensitive trigger hairs cause the traps to close on their unfortunate prey.

The next question that may come to mind is, why exactly are these plants seeking out flesh? Shouldn't photosynthesis produce all the food a plant needs? Of course, the answer to the latter question is no. Many times, these plants live in harsh environments – acidic bogs lacking essential nutrients, or rainforests rich with hundreds of species all competing for the same set of nutrients. In the simplest of terms, these carnivorous plants mainly eat flesh in order to supplement nitrogen into their diet.

Name that carnivore

Out of the 20 carnivorous plant species in Maryland, 18 of them are native and 2 have been introduced. These carnivores fall into three groups: sundews (*Drosera*), pitcher plants (*Sarracenia*) and bladderworts (*Utricularia*).

Sundews (*Drosera*) are passive prey trappers. Charles Darwin became so enamored of sundews that he once commented, "I care more about *Drosera* than the origin of all the species in the world." These tiny predators use tentacle-like leaves with brightly colored glands to attract and trap prey. Insects that land on the leaves become stuck in mucilage secreted by the glands and are gradually digested by a suite of enzymes and acids. Some species even bend their "tentacles" slowly around their meal. As the sundew's meal digests, glands on the leaves slowly absorb nutrients. On average, one sundew traps and consumes about five insects per month.

More than 180 species of sundews can be found around the world and on every continent except Antarctica. Maryland contains four species of *Drosera*, including the Pink sundew (*Drosera capillaris*), a State endangered plant found in only three places on the Eastern Shore. Pink sundew is only about 2-4 cm in diameter and sports pink flowers in early May. The thread-leaved sundew (*Drosera filiformis*), named for its thread-like leaves, has been introduced to several bogs in Maryland.

Fly out

Pitcher plants are the largest carnivorous plant species in Maryland and generally occur in acidic fens and seepage wetlands. The Northern pitcher plant (*Sarracenia purpurea*) is the only pitcher plant native to Maryland and grows in such limited numbers that it is considered threatened in the State. In contrast, the yellow pitcher plant (*Sarracenia flava*) has been planted in several areas. Both species passively trap prey by using brightly colored tubes with the sweet scent of nectar. Many of these hungry critters land on the pitcher plant, follow the colorful veins in the leaf and fall in with the aid of downward pointing hairs and slippery cells.

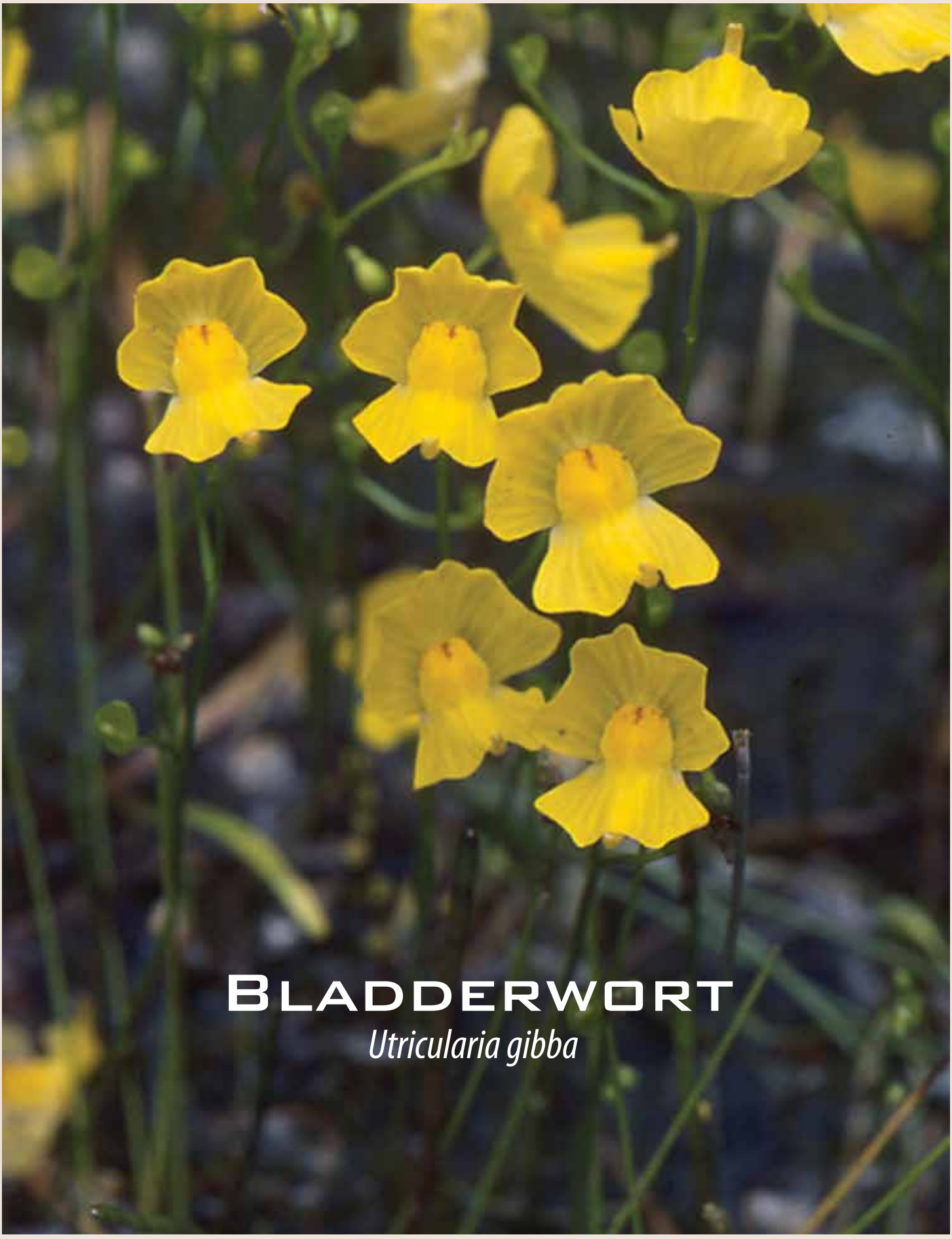
Interestingly enough, the non-biting pitcher plant mosquito (*Wyeomyia smithii*) has evolved with pitcher plants; its larvae live within the pitcher. The

Dave Brinker

Sarracenia purpurea

Richard Orr

Anne Arundel County pitcher plant bog



Bruce Salmon

Dave Kazyak

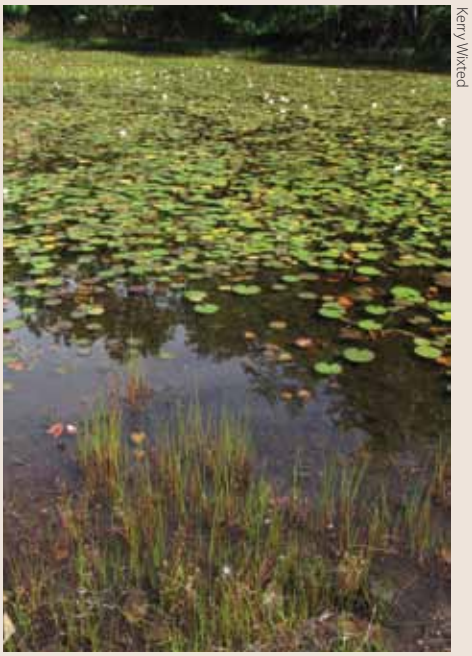
Drosera Rotundifolia, round leaf sundew

pitcher plant mosquito acts as the top level predator in the pitcher and feeds on parts of animals that the plant cannot digest as well as microscopic organisms such as rotifers. Over 30 species of New World pitcher plants (those in the family Sarraceniaceae) are known to exist worldwide.

Complex carnivore

Bladderworts, by far the most sophisticated carnivorous plants, are typically aquatic. Their unsavory name stems from the air-filled sacs or bladders used to lure and actively capture unsuspecting prey. Much of the plant exists as a fine network of bladders and filamentous leaves submerged under the water or a wet substrate like gravel. Because they spend much of their time below a surface, bladderworts are often overlooked until they produce showy flowers that stick out above the water or substrate surface.

Bladderwort bladders are considered one of the most complex structures in the plant world. When water fleas or midges float past and tap specialized trigger hairs on the bladders, a flap on the bladder opens. The plant then uses a vacuum-like force to suck in prey. Once the bladder fills with water, the flap closes and a sugary substance is released to seal both the door and the fate of its prey. This process occurs in one five-hundredth of a second! Over 200 bladderworts exist worldwide.



Kerry Wixted

Anne Arundel County bog with sundew

Maryland has 14 different species of bladderworts, many of which can be found in ditches and open ponds. One of the most unique bladderworts in Maryland is the State endangered swollen bladderwort (Utricularia inflata). This species resembles a floating wheel in the water when it produces its bright yellow flowers.

Losing battle

Throughout the world and in Maryland, many carnivorous plants are rare, threatened or endangered. Carnivorous plants in Maryland face multiple threats. First and foremost, habitat alteration and destruction accounts for the greatest loss of our carnivorous plants. The International Carnivorous Plant Society estimates that as much as 95 percent of carnivorous plant habitat in the United States has been lost.

Carnivorous plants are also threatened by amateur collectors who poach vulnerable populations. Current research also suggests that carnivorous plants are further threatened by poisonous prey contaminated by heavy metals and insecticides.

Carnivorous plants are yet another fascinating example of the rich diversity of life found in Maryland. These plants have evolved over thousands of years to endure and thrive in harsh, unsympathetic environments.

Yet, we risk losing them if we fail to recognize their innate value. As research continues, scientists are discovering plants such as the State threatened purple bladderwort (Utricularia purpurea) are shifting toward using mutual relationships with algae to obtain nutrients rather than consuming prey.

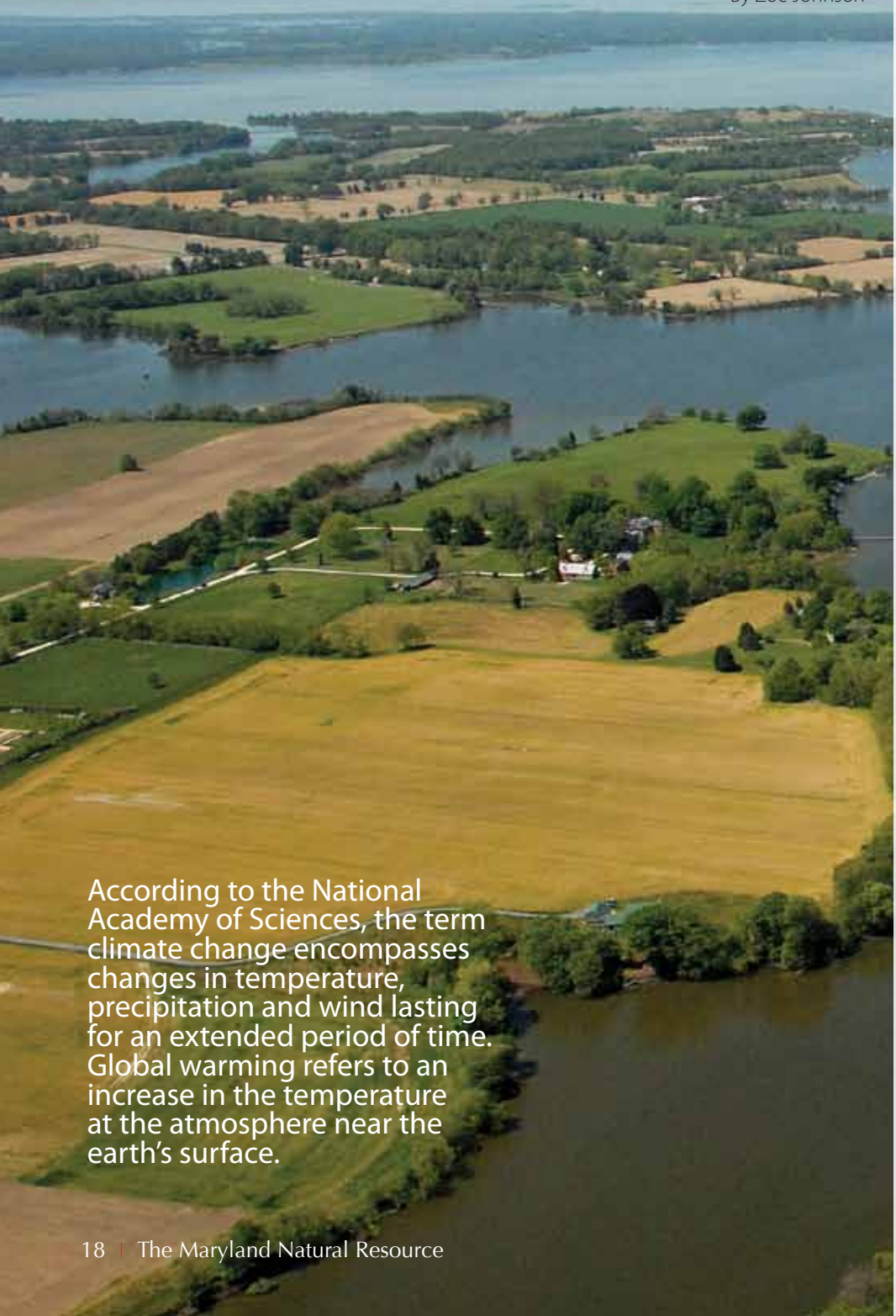
Other research is beginning to redefine the concept of plant carnivores. Even those colorful petunias on porches and in gardens have specialized hairs to trap prey. As we learn more about the hidden complexity of plants, we need to ask ourselves, "Is it safe to turn my back on my garden?" ■

Kerry Wixted is a Natural Resource Biologist and Education/Outreach Specialist with the DNR Wildlife and Heritage Service.

THE TIMES THEY ARE A-CHANGIN'

The impact of climate change on Maryland

By Zoë Johnson



According to the National Academy of Sciences, the term climate change encompasses changes in temperature, precipitation and wind lasting for an extended period of time. Global warming refers to an increase in the temperature at the atmosphere near the earth's surface.

Maryland's people, wildlife, land and public investments are at risk due to expected consequences of climate change including sea level rise, increased storm intensity, extreme drought and heat waves, and intensified wind and rainfall events. These impacts will affect many facets of our society and economy, including the State's agriculture industry, forestry and fishery resources, freshwater supply, aquatic and terrestrial ecosystems, and the health of our citizens.

Most alarming, perhaps, is the risk that sea level rise poses to our coast. Due to its geography and geology, the Chesapeake Bay region is ranked the third most vulnerable to sea level rise in the nation, behind Louisiana and Southern Florida. Historic tide records show that sea level in the Chesapeake Bay increased by approximately one foot over the last 100 years. As a consequence of climate change, sea level is likely to rise at least twice as fast as it did during the 20th century, resulting in a potential one-foot rise by 2050 and between three and four feet of rise by 2100.

Resources at risk

The distributions of many of the species and habitats that the Department of Natural Resources (DNR) manages will be affected by the combined forces of increasing temperature and changes in precipitation patterns. Additionally, the expected rise of sea level by as much as four feet over the next century, compounded by the effects of coastal storms or nor'easters, will cause damage to the facilities and infrastructure in our State Parks.

With that in mind, DNR is working to adapt how we manage our natural resources as well as how we build and manage our facilities based on the understanding that the climate is changing. The State is working on two fronts to plan for climate change: reducing greenhouse gas emissions, the drivers behind climate change; and taking action to address the likely impacts — to essentially begin to adapt to climate change.

Twenty-six other states have created climate action plans. However, most states have focused on climate change

mitigation, addressing the policy changes needed to combat greenhouse emissions, such as setting energy efficiency standards or increasing use of renewable energy. Only a few states have included an adaptation component in their state-level action plans, yet this is a vital piece.

Adaptation —planning guidance

Under the leadership of Governor Martin O'Malley, the Maryland Commission on Climate Change has developed two climate change adaptation strategies that are currently being used to guide State-level planning efforts.

"For our prosperity, for our current and future generations, and for the health of our State, which is so vulnerable to rising sea levels, we must take action on climate change now – not later," says Governor Martin O'Malley. "Maryland can't afford to be left behind. We must commit to taking the actions necessary to protect our environment, our economy, and our citizens."

The first strategy, released in 2008, addresses the serious impacts associated with sea level rise and coastal storms. The second strategy, released in early 2011, addresses changes in precipitation patterns and increased temperature and the likely impacts to human health, agriculture, ecosystems and built infrastructure.

DNR Secretary John Griffin co-chairs the Commission's Adaptation and Response Working Group, which facilitated the planning process to develop the policies. DNR is currently using both strategies to guide and prioritize its climate change adaptation efforts.

First and foremost — reducing our carbon footprint

DNR is committed to doing its part to reduce the drivers behind climate change. In 2009, DNR calculated its carbon footprint and implemented a number of reduction strategies to minimize energy consumption and improve efficiency. The agency also planted 186.5 acres of forest on non-forested land to offset a significant portion of its 2006 calendar year emissions.

Since then, the accounting of overall resource consumption has been expanded to include waste discharge and greenhouse gas emissions produced through electricity, fuel consumption and vehicle emissions. In the future, DNR will use the performance goals and benchmarks soon to be established through the Maryland's Environmental Footprint Initiative to guide its reduction practices.

Building resilience — protecting and restoring ecosystems at risk

DNR staff is already working to identify and protect at-risk species and habitats, as well as expand its land protection efforts to acquire key pieces of land. These efforts will be targeted toward areas that provide an "ecosystem service" that minimizes the effects of climate change, such as a storm surge buffer, or a wetland or habitat migration corridor.

Protecting and restoring Maryland's natural shoreline and its natural resources, including its tidal wetlands and marshes, vegetated buffers and bay islands, is critically important, as these areas shield Maryland's shoreline and interior from the impacts of sea level rise and coastal storms.

Avoiding future impact — making sound investments

One of the easiest ways to reduce vulnerability to climate change is to avoid placing more infrastructures in harm's way. Recognizing this, DNR is committed to siting and designing all new facilities and infrastructure in order to avoid or minimize anticipated climate change impacts, particularly sea level rise.

As an example, the new visitor center at the Harriet Tubman State Park was designed with this in mind and will be elevated two feet above the existing 100-year base flood elevation, making it less vulnerable to damage from a rising sea level.

Helping others — building coast-smart communities

To ensure that Maryland's local communities are adaptive and resilient to climate change, DNR developed the Coast-Smart Communities Initiative. Under the project, DNR's Chesapeake and Coastal Program administers a competitive grant program to provide financial and technical assistance to local governments that wish to reduce their vulnerability through planning and permitting activities. Grants of up to $75,000, drawn from the federal Coastal Zone Management Act funds, are awarded on an annual basis. Projects are currently underway in Anne Arundel County, Caroline County, the City of Annapolis and the Town of Queenstown.

Moving forward — leading by example at DNR

To secure a sustainable future for Maryland, we must think about climate change — both what drives it and the consequences of it — in all that we do. To put this adage into practice, DNR issued a new policy, Building Resilience to Climate Change, in October 2010 to guide its investments in and management of land, resources and assets in order to better understand and adapt to climate change.

The policy addresses land and infrastructure investments, habitat restoration projects, government operations, research and monitoring programs, and natural resource management efforts. The intent of the policy is to lead by example, and along the way encourage and educate others in the methods for managing natural resources and designing facilities in light of a changing climate.

Due in part to DNR's efforts, Maryland is recognized as a national leader in advancing the scientific understanding of climate change, and in advocating for sound planning to avoid or minimize the anticipated impacts. While we have made notable progress on both the climate change and sea level rise fronts, more work remains to be done. Continued progress will take time, fiscal resources, flexibility and continual commitment. The good news is that DNR is well up to the task. ■

Zoë Johnson is the Program Manager for Climate Change Policy with DNR's Office for a Sustainable Future. Zoë has worked on climate change, sea level rise and coastal hazard planning initiatives for the State of Maryland since 1998.

Maryland is… Smart, Gree

50,000 new trees planted in 2009-2010

In January, Governor Martin O'Malley announced that Maryland surpassed its citizens' goal of planting and registering 50,000 trees through the Marylanders Plant Trees program. Marylanders planted and registered 50,089 new trees as of December 2010.

Governor O'Malley launched the Marylanders Plant Trees program, part of his Smart, Green & Growing initiative two years ago with a goal of planting 50,000 new trees by 2010. The new goal is to plant 100,000 trees by the end of 2012.

The State is also on track to exceed its goal of planting 1 million trees on public lands by the end of this year with the help of the Department of Public Safety and Correctional Services and Maryland inmates, who have planted more than 550,000 trees toward the goal since 2009. State officials plan to plant more than 500,000 additional trees this year.

Anthony DePanise

Maryland places 3rd in Odwalla tree planting program

DNR and the Maryland Parks Service (MPS) will receive $17,443 to plant trees in Maryland State Parks after finishing in third place in the Odwalla Plant A Tree program. From May 25 through December 31, 2010, Maryland competed for tree-planting funds through the program, a partnership between Odwalla, MPS and the 49 other states. The program was designed to build stewardship, raise awareness and earn money for important reforestation and planting initiatives.

Jay Baker

Governor Proposes $25 Million for Chesapeake Trust Fund

Governor Martin O'Malley has proposed $25 million in fiscal year 2012 funding for the Chesapeake and Atlantic Coastal Bays Trust Fund, a 25 percent increase over 2011. The dedicated fund supports projects designed to reduce non-point source pollution that reaches the Chesapeake Bay.

Maryland Surpasses BayStat Land Conservation Goals

In 2010, Maryland surpassed its annual land conservation goal, protecting 12,812 acres. The State's goal of conserving 9,700 acres was set using BayStat, a powerful tool established in 2007 to assess, coordinate and target Maryland's restoration and conservation programs. On Wednesday, December 15, the Maryland Board of Public Works held its final meeting of calendar year 2010, approving projects that marked this milestone.

Victor W. Martin

State receives $5.8 million for Green Jobs

Alexander M. Sanchez, Secretary of the Maryland Department of Labor, Licensing and Regulation, announced that the Maryland Energy Sector Partnership, led by the Governor's Workforce Investment Board, has been awarded a $5.8 million grant by the U.S. Department of Labor Employment and Training Administration to implement programs that will prepare more than 1,500 Marylanders for green jobs in manufacturing, construction, environmental technology and solar energy.

"In Maryland we have set a goal of creating at least 100,000 green jobs by 2015, and we are working across our State government along with partners in organized labor, and in the private, academic, and non-profit sectors to implement specific action items that are designed to create new jobs, advance eco-friendly technologies, and provide more Marylanders with the skills they need to participate and maximize the benefits of a green economy for their own families," said Governor Martin O'Malley.

The project will involve partnerships among businesses, community colleges, labor apprenticeship programs and the One-Stop Workforce System. It will implement training for both new and incumbent workers to ensure there is a pipeline of skilled workers for jobs in the emerging green economy. Emphasis will be placed on providing opportunities for veterans and reservists, low wage workers and ex-offenders to meet the demands of Maryland employers.

TREE-MENDOUS MARYLAND

A canopy for tree planting programs

By Lindsay Major

Planting a tree means more than providing a shady spot on a muggy Maryland summer day. Trees can evoke memories of a game of hide and seek from childhood, picnicking with a loved one beneath a canopy of leaves or family trips to see the changing fall hues. Trees also illustrate the passing of time through their growth.

In a more factual sense, trees protect water quality, clean our air and provide wildlife habitat. One large tree can eliminate 5,000 gallons of stormwater runoff each year, and well-placed trees can help reduce energy costs by 15 to 35 percent. Trees also enhance our quality of life, beautifying neighborhoods and highways, providing sound barriers and shade, and helping to increase property values.

The United Nations General Assembly declared 2011 as the International Year of Forests to raise awareness of sustainable management, conservation and development of all types of forests. The initiative is a global platform to celebrate people's actions to sustainably manage the world's forests. Maryland embraces celebrating forests for people in this international context.

The Department of Natural Resources (DNR) TREE-MENDOUS MARYLAND program is working vigorously to improve Maryland's landscape and citizens' quality of life through several tree planting initiatives. The program provides high-quality, native trees and shrubs at reasonable prices for plantings on public lands – such as community open spaces, school grounds, government facilities and rights-of-way.

These trees are planted in towns and cities, in parks and schoolyards, and along streams and creeks where they will attract birds, improve air and water quality, reduce soil erosion, add beauty to surroundings and most of all contribute to Marylanders' quality of life.

To help ensure a more sustainable future for generations to come, citizens can give the gift of trees.

Gift of Trees

When a furry four-legged family member passes away at Chesapeake Pet Resort & Day Spa, a donation is made to the Gift of Trees. Even Socks, President Bill Clinton's famous cat, had a tree planted in his memory. This spring, all of the trees the pet resort has donated since fall 2009 will be planted on April 30 at Myrtle Point in St. Mary's County by Boy Scout Pack 1203 and Cub Scout Pack 1203, both of California, Md.

The Gift of Trees, a component of TREE-MENDOUS MARYLAND, is a way to celebrate, honor or memorialize a person or pet by having a tree planted. The cost is $40 and the tree is planted in the county in which the recipient resides. Participants also receive a certificate recognizing their contribution. In 2010, 855 trees were donated to schools, parks and community groups through the Gift of Trees program.

Community groups also volunteer to plant the Gift of Trees, including the Maryland Association for Environmental and Outdoor Education (MAEOE). MAEOE Green Schools can receive a 1:1 match of up to 20 trees.

Receive community grants

Communities can apply for grants to offset the cost of trees through groups such as the Maryland Urban and Community Forest Committee, a sub-committee of the Maryland Association of Forest Conservancy District Boards and the Anne Arundel County Forestry Board.

The primary functions of the Committee are to promote and coordinate the Maryland Community PLANT Award Program that officially recognizes communities planting and caring for trees, and to administer grants to schools and communities through their local Forestry Boards that promote planting and care of trees.

Plant trees and be counted!

Governor Martin O'Malley launched the Marylanders Plant Trees program in April 2009 to give citizens an opportunity to impact our natural world. A part of the Smart, Green & Growing initiative, the Governor's goal was to plant 50,000 new trees by the end of 2010. Marylanders heeded the challenge: 50,089 new trees were planted and registered as of December 2010. The new goal is to plant 100,000 trees by the end of 2012; 25,000 trees each year.

Citizens can get Marylanders Plant Trees coupons (trees.maryland.gov) and

use them at more than 80 participating nurseries across the State; at least one nursery in each county and Baltimore City participates. Each tree must be worth $50 or more and must be listed on the tree list approved by DNR.

"The Marylanders Plant Trees program has been a wildly successful promotion at our garden center," says Tim Hamilton, marketing director at Homestead Gardens, Inc. "It started off strong and the popularity of the program never ebbed. In fact, we have had customers coming in looking for native trees in the dead of winter."

The Marylanders Plant Trees website can help citizens decide what to plant and where to plant it, as well as calculate the environmental benefit of the tree(s) planted. When registering a tree on the website, participants are eligible to win prizes such as gift cards, rain barrels and a yacht tour.

In the first drawing of 2011, Janet Sanford of Lutherville won a $200 gift card to Valley View Farms in Cockeysville.

"Healthy trees improve our environment, beautify our landscape and uplift our spirits," says Sanford. "I encourage all Marylanders to plant one, perhaps with a child, as a learning experience. I will be adding several trees and under plantings to my property for the enjoyment of all who will see them. I'd like to thank DNR and Valley View Farms for this much appreciated opportunity."

Take the school challenge

DNR staff began the Marylanders Plant Trees School Challenge in February 2010, distributing materials to more than 2,200 Maryland teachers to help them include the program and its earthly benefits into lesson plans. Trees planted between April 1, 2009 and April 30, 2010 were counted toward a school's goal.

The school challenge encourages all Maryland elementary, middle and high school students to reach out to family, friends and neighbors and encourage them to plant native trees on their school's behalf. Students may also collaborate with community, watershed and service organizations to plant trees.

The Lucy School of Middletown was the grand prize winner for 2010, planting 207 trees during the 2009-2010 school year, with many on the school grounds. In all, 82 schools participated by planting trees to win prizes, save energy, help reduce air and water pollution and beautify their communities.

"This has been such a wonderfully enriching and enjoyable learning opportunity for our students. We were particularly pleased with the expertise of the DNR staff in preparing and leading age-appropriate and engaging activities," says Lucy School Director Dr. Victoria Brown of their prize, a field day with DNR. "The lessons they learned support Lucy School's own environmental curriculum and our mission to help each student appreciate the delicate balance of nature and grow to become stewards of the environment."

DNR is continuing the Marylanders Plant Trees School Challenge for a second year. Schools will compete by planting trees and registering them on the Marylanders Plant Trees website. The grand prize for the school that plants and registers the most trees is a visit from the Maryland Park Service's popular Scales & Tales program. This year's challenge includes all trees planted from May 1, 2010 to April 30, 2011.

To help schools with the challenge, the Marylanders Plant Trees website contains location specific guidance for selecting, purchasing and planting trees, as well as a tool to calculate the benefit of the trees planted. Eligible trees planted for the challenge can be registered by the students and parents online in the name of their school.

Marylanders have many ways in which to help preserve our natural resources and create a better life for all. Planting a tree may seem a small step in creating a sustainable future, but from tiny acorns grow mighty oaks. ■

trees.maryland.gov/

Lindsey Major

Lindsay Major directs the TREE-MENDOUS MARYLAND with DNR's Forest Service.

PARK QUEST 2011

THE ADVENTURE BEGINS

By D. Mathew Ritter

Have you ever wanted to go horseback riding on a park trail, kayak around Janes Island State Park, live a day as a 1700s Milling Operator, explore the fort, bike a rail trail, take a hike with General Smallwood, take part in a miner's life, learn to disc golf or hike the Appalachian Trail? Park Quest 2011 will allow you that and more…in just one summer.

Let the games begin

The 2011 Park Quest season is about to kick-off with 24 quests planned throughout the State to highlight the wonderful natural, cultural, historical and recreational activities that make Maryland State Parks special. Park Quest is truly an insider's guide to your State Park System.

Park Quest began as six different quests offered on the Eastern Shore of Maryland and has now grown to include 24 State Park locations throughout Maryland and 1,000 family teams getting outside, playing and enjoying the best Maryland has to offer…together.

Good for your body and soul

In recent years, researchers have voiced concerns over how little time children spend outdoors. Many children have little to no significant exposure to the outdoors other than the time they spend at organized sporting events.

Park Quest is a response to this concern; its purpose is quite simply to encourage families to get outside and play. Park Quest's challenging outdoor activities keep children engaged and instill in them a lasting interest to explore the natural world they live in.

Come on out!

Program registration is free and includes entrance into all participating Park Quest Parks. The activities are also free to families with the exception of Super Quests that utilize Park concessionaires.

Park Quest 2011 will run from May 7 to September 5, 2011. Registration will begin Monday April 25, 2011 at 10 a.m. Teams completing 10 of 24 quests will qualify for the Park Quest Rendezvous on September 24, 2011 at the Hammerman Area of Gunpowder Falls State Park. The year-end Park Quest Rendezvous is a celebration of the season with games, activities, food, and prizes. ■

dnr.state.md.us/parkquest

D. Matthew Ritter is Chief of Interpretation for DNR's Maryland Park Service.

Park Quest on Facebook

To see how much fun being outdoors and exploring Maryland State Parks with family and friends is, visit the Park Quest Facebook page – there you will find teams sharing their photos and adventures!

"Team Voodoo had a blast once more… I can't even begin to think about how boring summer would be without it. WE LOVE PARK QUEST!!!! See ya next year!"

"This is Marcellino Mahem's first Park Quest and we're excited about next year's program. Thanks to those that put so much in this program. Seeing so many families at the Finale playing and being together is a beautiful thing!"

"Team #12: Three Jimmies and a Sook, finished off this year's Quest with a wonderful weather weekend for camping at Gambrill State Park and knocked out quests at Cunningham Falls State Park and Fort Frederick State Park, where we made WAMPUM (which aren't bracelets, as the docent pointed out)."

The photos for this article where taken by the participating families and appeared on facebook.com/pages/Park-Quest-Maryland

SHORT TAKES

NRP confiscates tons of poached striped bass; $30,500 reward posted

The Maryland Natural Resources Police (NRP) has confiscated more than 12.5 tons of illegally caught striped bass since late January from four illegally anchored gill nets near Bloody Point Light, south of Kent Island in the Chesapeake Bay.

Legal sized striped bass were sold to local seafood distributors, illegal sized fish were donated to homeless shelters and 400 pounds were given to state biologists for use in an expanded gender sampling survey.

Josh Davidsburg

"Citizens across Maryland and up and down the East Coast continue to be appalled as more than 12 tons of illegally harvested rockfish — our State fish — have been pulled from the Chesapeake Bay over the past week," said Governor Martin O'Malley. "These violations are a shameful theft of the public trust, impacting a fishery we have worked long and hard to restore."

Stakeholders contributing to the reward include Chesapeake Bay Saves, the Chesapeake Bay Foundation, the Humane Society of the United States, Coastal Conservation Association, the Maryland Watermen's Association, the Maryland Saltwater Sportfishermen's Association and the Maryland Charter Boat Association.

Maryland's commercial striped bass fishery is managed on a quota system, in cooperation with the Atlantic States Marine Fisheries Commission; the commercial gill net quota for February was 354,318 pounds. When the illegally harvested striped bass confiscated by the NRP were deducted from the quota, DNR was forced to immediately shut down the fishery.

"Watermen are allowed to catch about 300 pounds of rockfish per day. We seized [more than] 20,000 pounds. That means these poachers are stealing 66 days of work from honest watermen," said DNR Fisheries Service Director Tom O'Connell.

State Senator Brian Frosh has introduced a bill that would allow DNR to revoke a license if that licensee is issued a citation for a specified offense related to unlawfully taking striped bass or crabs.

Information on this crime may be called into the Natural Resources Police Catch-a-Poacher Hotline at 800-635-6124. Callers may remain anonymous.

DNR Celebrates Black History Month

The DNR Office of Fair Practices held a Black History Month event at the Tawes Office Building with speaker Melanie Herrera, president of Blacks of the Chesapeake. At this event, the DNR Office of Fair Practices also presented the 2011 Dr. Martin L. King, Jr. Drum Major for Justice Award to Blacks of the Chesapeake, Inc. founder and former DNR employee, Vincent O. Leggett.

Anthony Burrows

Left to right: Captain Eldridge Meredith, Capt. Tyrone Meredith, Capt. Vera Meredith, Melanie Herrera, Richard Allen, with DNR's Office of Fair Practices and Vincent Leggett

In addition, DNR presented 2011 Dr. Carter G. Woodson Leadership icon awards to: Corporal Raymond Griggs, NRP; Caroline Asher, Personnel Administrator; Leon Tunctson, IT Systems Specialist; and Nakia Johnson, Park Services Associate II, Maryland Park Service.

Website Update

In April subscribers can visit our enhanced *Maryland Natural Resource* magazine website at *dnr.state.md.us/naturalresource*. We are updating the site to make it more interactive with hyperlinks to other resources on the DNR website. Watch for video clips to accompany stories in the future.

Maryland Wild Turkey Federation Honors NRP Officer

The Maryland Chapter of the National Wild Turkey Federation honored Maryland Natural Resources Police Corporal Mark McMillan as Conservation Officer of the Year at the State banquet on January 18, 2011 in Stevensville.

NRP Photo

Cpl. McMillan was honored for his dedication to Maryland's resources and numerous hours he spent safeguarding the State's wildlife and fisheries resources.

"Mark routinely requests to work on his scheduled days off to investigate and stake-out suspected poaching areas. Mark's dedication has resulted in apprehending numerous poachers for illegally hunting wild turkeys and bears," said Mark's supervisor, Sgt. Dave Marple.

McMillan has been employed by the Maryland Department of Natural Resources since 1989 and currently works in Allegany and Garrett Counties. Cpl. McMillan is very active in Maryland's Hunter Safety and Education Program, which promotes safe and ethical hunting to sportsmen.

Outdoor appétit: **Perch with a Quick Kim chi**

Marty Gary

This recipe comes from Executive Chef Rich Gunter. He is one of the many chefs, along with Whole Foods of Annapolis, partnering with DNR to promote Maryland's local fisheries.

For the Perch

2 fully cleaned 9-11oz yellow perch (head on or off it's up to you)
Rub gently with olive oil, sea salt and freshly ground black pepper.
Grill over hot coals on both sides until done (about 4 minutes per side)

For the Kim chi

Every Korean family has a secret recipe for Kim chi. Most take a lot of time and careful monitoring, unlike this recipe which only requires about 15 minutes of prep time and 2 hours for marinating in your refrigerator.

- 1 head of Napa cabbage rough chopped in pieces
- ¼ cup chopped scallions
- ¼ cup shredded carrot
- 1 tablespoon chopped garlic
- ¼ cup sweet chili sauce
- ¼ cup soy sauce (though I prefer to use Squid Brand fish sauce)
- 1 tablespoon rice wine vinegar
- 1 teaspoon kosher salt

Mix everything together in a large bowl and crush the cabbage with your hands until the mix is soft (or you can put it in a mixer for about 10-15 seconds).
Let the mix marinade in your refrigerator for 2 hours stirring every 30 minutes.

Plating

While your perch is still hot, spoon the desired amount of the Kim chi (at room temperature) across the top and serve.

maryland public television

OUTDOORS Maryland

CHESAPEAKE BAY WEEK®

Celebrates & Investigates
the State of the Bay
April 10-17

By Michael English

Each year Maryland Public Television celebrates Chesapeake Bay Week to promote public discussion and encourage action concerning the fragile health of the Chesapeake Bay and its tributaries. Chesapeake Bay Week is April 10-17 and can be seen on all Maryland Public Television channels across the state. Several other television stations – within the vast 64,000 square-mile watershed – will also broadcast Chesapeake Bay Week. This year's programming includes new and exciting topics, some of the highlights are:

The Chesapeake Bay Bridge
Monday, April 11 at 9 p.m.
The Chesapeake Bay Bridge explores the far-reaching effects the Bay Bridge has had on everything from commerce to commuting. It helped fuel the growth

of the tourism industry, transforming tiny beachside resorts like Ocean City into crowded summertime destinations. Residents and business owners reflect on the changes, and how they were initially caught off-guard by throngs of vacationers descending on the small coastal towns in 1952.

Rivers of Worry
Wednesday, April 13 at 8 p.m.
Everyone knows that the Chesapeake Bay is in trouble. Fewer are aware of the persistent and dangerous contaminants polluting our waterways long before it reaches the Bay. Rivers of Worry asks the central question: Is the water safe for human health?

The scenic Severn River on the Bay's Western Shore is a typical urban-suburban waterway. Many enjoy the lifestyle – fishing, boating and swimming. But because of high fecal bacteria counts after a hard rain, officials advise everyone to stay out of the water there and across the State for at least two days – children are among those at highest risk. The dangers are highlighted by the story of a resident who acquired a life-threatening infection from fecal bacteria after splashing in the creek behind his house.

On the Eastern Shore, public and private wells are the source of drinking water for the entire Delmarva Peninsula. Depending on the area, water samples show a range of natural and human-caused contaminants: nitrates, pesticides, herbicides and arsenic. Most are found only in trace amounts, but little is known about the possible health effects of their accumulation or interaction. Rivers of Worry explores these and other concerns about the health of public waterways.

Other programs to air during Chesapeake Bay Week 2011 include:

Tuesday, April 12:
- Chesapeake Stories Two -- 8 p.m.
- The Runoff Dilemma – 10 p.m.

Wednesday, April 13:
- The Skipjacks – 8:30 p.m.
- The Last Boat Out – 9:00 p.m.
- On the Trail of Captain John Smith: Rediscovering Chesapeake Bay – 9:30 p.m.
- EcoViews: Life on the Bay – 10:30 p.m.
- Sprawl: A Tipping Point – 11:00 p.m.

Thursday, April 14:
- Brewed on the Bay – 8:30 p.m.
- Chesapeake Wine Country – 9:00 p.m.
- Eatin' Crabs: Chesapeake Style – 9:30 p.m.
- Eatin' Crab cakes: The Best I Ever Had – 10:00 p.m.
- Chesapeake Stories One – 10:30 p.m.
- Hidden Rivers – 11:00 p.m.

Friday, April 15:
- Chesapeake Bay by Air – 9:00 p.m.
- Blind Spots: Threats to the Chesapeake – 10:30 p.m.

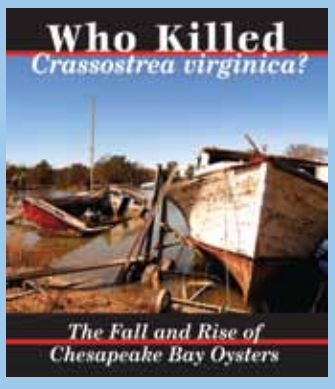
Sunday, April 17:
- Chesapeake Bay Week Volunteer-a-thon 2011 – 6:00 p.m.

Growing up on Tilghman
Tuesday, April 12 at 8:30 p.m.
Not so long ago, Tilghman Island was a community with few amenities and no fences, where children roamed freely, neighbors took care of each other and

families bonded together to wrest a living from the bountiful but challenging Chesapeake Bay. It was a community that valued hard work, ingenuity, good humor and the beauty and power of the natural world.

Produced by the Tilghman Island Museum, Growing up on Tilghman takes a fond look at the history of this unique Chesapeake waterman's community. Filled with beautiful footage of the Bay and archival images from years gone by, Growing Up on Tilghman also introduces viewers to 11 unforgettable residents as they recall their unique heritage and discuss the challenges of sharing it with future generations.

Who Killed Crassostrea Virginica: The Fall & Rise of Chesapeake Bay Oysters
Sunday, April 10 at 10 p.m.
While confronting head-on the conflicting claims about the calamities that struck down the world's richest oyster grounds, this fresh perspective re-evaluates the roles of those who harvest and now seek to replenish the oysters in the Chesapeake Bay. The roles of watermen who fish the



oysters, oyster farmers who grow them and the scientists who study them are illuminated by recent research in science labs, along the bottom of the Bay and deep in long-forgotten historical archives. Directed and produced by Michael W. Fincham, Maryland Sea Grant College.

Michael English is an Executive Producer with Maryland Public Television.

DNR @ WORK

Zoë Johnson

Program Manager for Climate Change Policy

By Karis King

Thomas Johnson

The first step is admitting there is a problem… and if you need a little convincing that climate change exists, spend 15 minutes talking with Zoë Johnson, DNR's Manager for Climate Change Policy.

"The impacts are apparent," Zoë says. "13 Chesapeake Bay islands have disappeared beneath the water; over 400,000 acres of land on the State's Eastern Shore are gradually becoming submerged; and the State is currently losing about 580 acres each year to shoreline erosion. "Vast amounts of wetlands will ultimately be lost."

Examples like these, though hard to swallow, are often necessary to stress the reality of climate change.

"I'm working on a long-term problem and it's probably not always the highest priority to be addressed given the economy or societal perspective," Zoë admits.

However, these factors haven't curbed her dedication to the subject she has spent nearly 15 years investigating. In fact, Zoë admits her favorite part of the job is also the toughest part.

"I enjoy the process: Taking on this large, complex issue and figuring out all of the methods for addressing the problem," she said, noting that this is not the profession for those who appreciate immediate results.

A staff member of DNR's Office for a Sustainable Future, Zoë has been actively involved in climate planning and policy initiatives in Maryland since 1998. She is the author of several reports and publications on climate change and sea-level rise adaptation and also serves as key staff to Maryland's Commission on Climate Change adaptation and response working group.

The working group has released two strategies that serve as a guide to find innovative solutions to the challenges of climate change and create new approaches, mechanisms and partnerships to further develop effective ways to adapt and implement on-the-ground projects.

With her steadfast commitment to preserving Maryland's shoreline, it may come as a surprise that Zoë is actually from the state of Washington. She received her bachelor's degree in urban and regional planning from Western Washington University and her master's degree in coastal and marine policy from the University of Washington.

She moved to Maryland in 1998 to complete a two-year fellowship and "absolutely loved living in Annapolis and working at DNR." Zoe also says she much prefers the weather in Maryland over that of Seattle.

When taking a break from work, she enjoys spending time with her two children Thomas, 10, and Amelia, 8. "We love the outdoors; hiking, biking, swimming and skiing," she says.

In looking toward the future, Zoë hopes to help protect our natural resources for future generations.

"I would like to see that planning for climate change is physically mainstreamed into all that we do and all that everyone does," she says. "From the decisions we make about what cars we buy to how we build our homes, we need to be living greener and cleaner." ■

Karis King is an intern in the DNR Office of Communications.

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